

MINNESOTA AMENDMENT MN16 to 180-VI NATIONAL PLANNING PROCEDURES HANDBOOK PART 600

NUTRIENT MANAGEMENT PLANNING POLICY/ COMPREHENSIVE NUTRIENT MANAGEMENT PLANNING POLICY

This policy document augments guidance found in NRCS Minnesota Conservation Practice Standards Nutrient Management (code 590) and Waste Utilization (code 633) and cost-sharing program documents. The standards, program guidance and job sheets, worksheets and many other items listed below are available on-line at:

<http://www.mn.nrcs.usda.gov/ecs/nutrient/nutrient.html>

NUTRIENT MANAGEMENT PLANNING

Nutrient management planning must be consistent with NRCS policy contained in 190 Part 402 of the General Manual and Minnesota state amendments to National Planning Procedures Handbook **both available on-line**. Two progressive planning levels are possible: 1) Baseline or Strategic and 2) Field specific annual planning.

Baseline or strategic planning increases producer knowledge of nutrient management and prepares them for future planning efforts. Acreage necessary for manure applications is calculated. Special protection area management practices are recommended to insure compliance with state law (chapter 7020). Soil and manure testing and other activities are scheduled to gather information needed for field specific nutrient application recommendations.

Field specific annual nutrient planning results in field specific nutrient recommendations based on University of Minnesota (UofM) fertilizer recommendations and nutrient budgeting. Some deviation from UofM recommendations is allowed. Sensitive area practices in addition to those required by law are required.

Baseline (Strategic) Nutrient Management Planning

Baseline planning procedure

1. Interview producer to determine nutrient management **objectives** and **concerns** and to gather information about the producer's current nutrient management program (e.g. soil and manure analyses; records of past manure and commercial fertilizer applications; existing or planned application equipment and equipment calibration procedures; previous years' yield information and procedure used to determine yield goals; current nutrient rate determination procedures; livestock types and numbers; and existing manure storage and handling equipment). Some of this information is used to determine need for manure storage structures or runoff control systems (see CNMP section below). Some information may not be immediately available and will have to be gathered as part of the baseline planning effort. **Inventory worksheets are available on-line.**
2. Inventory the farm for soil, slope, erosion potential, sensitive features and special protection areas and conditions that could affect recommendations. Consult Conservation Practice Standard 590 and the publication "Applying Manure in Sensitive Areas". **Both are available on-line.**
3. Evaluate potential for off-site movement of Phosphorus (P) and Nitrogen (N) if data is readily available. This includes estimating soil losses. The P assessment will be conducted on all farms utilizing manure as a nutrient source and on any farm draining towards receiving waters listed as impaired because of P loading. The N assessment will be conducted on farms located within approved Wellhead Protection Areas. Consult Conservation Practice Standard 590 for additional areas where N assessments should be completed. **NRCS assessment tools are available on-line.**
4. Estimate quantity of manure produced annually and determine acreage needed to apply this manure at N, P and K based rates. The "minimum acreage calculator" part of Nutrient Management Planner for Minnesota" software can be used for this determination.
5. Schedule soil tests, manure analyses, equipment calibration and the year when an initial annual nutrient plan will be developed.
6. Help the producer implement the plan by conducting group meetings or one on one visits to sample soil and manure, calibrate equipment, establish crop yield goals, determine nutrient credits from legumes and manures and determine commercial fertilizer needs.

Steps 1 through 4 also apply to Comprehensive Nutrient Management Planning.

Baseline plan components

A baseline plan consists of:

1. An aerial photo or map identifying fields; fields to receive manure; sensitive areas; and special protection areas.
2. Generic narratives addressing current conditions including existing animals and manure storage and handling system; available cropland acres and acres needed for manure applications; required soil and water conservation practices, sensitive areas and sensitive area management practices; practices to reduce P accumulation in the soil and P movement towards surface waters; and operation and maintenance instructions. **Sample narratives are available on-line and are also contained in the “Nutrient Management Planner for Minnesota” software.**
3. Soils Maps and Legend and any existing soil test information.
4. Results of Field Nitrogen and Phosphorus Loss Assessments if information is currently available to conduct those assessments.
5. Recordkeeping guidance. **Recordkeeping templates are available on-line.**
6. General rate recommendations consistent with state rule (chapter 7020) and a schedule for a.) soil testing, manure analysis, application spreader calibration, determining realistic yield goals and legume and manure nutrient credits and development of an annual nutrient management plan. Manure rate recommendations, if needed for regulatory permit purposes, can be calculated using published average manure nutrient content values. **Forms for calculations are available on-line.** Otherwise keep application recommendations to simple statements such as do not apply manure at rates exceeding crop nitrogen needs. **A sample job sheet is included in the exhibits section (Part 600.5) of the NPPH.**
7. Fact sheets and educational materials describing realistic yield goals, soil and manure sampling and testing, manure and legume nutrient crediting, applicator calibration, and Minnesota's Nitrogen Best Management Practices (BMPs). **Sample fact sheets are included in the exhibits section (Part 600.5) of the NPPH and are also on-line.**

Some components of the baseline plan might not be completed in the 1st planning year due to lack of available information. Those components will need to be completed in the following year. Many baseline plan components are also Comprehensive Nutrient Management Plan components.

A sample nutrient management plan containing a template baseline plan can be found in the exhibits section of this NPPH as exhibit MN-3 in section 600.5.

Field Specific Nutrient Management Planning

This planning level results in field specific commercial fertilizer and organic nutrient rate, timing and application method recommendations for N, P₂O₅ and K₂O. General information on pH and lime is also presented. The level recommends more sensitive areas and sensitive area practices than required by state law. The additional practices can be found in the Nutrient Management (590) standard and “Applying Manure in Sensitive Areas” publications, **both available on-line.** Deviation from University of Minnesota nitrogen (N) and phosphorus (P) fertilizer recommendations is allowed on a case by case basis. Maximum allowance is shown in the table below:

Deviations			
	Nitrogen	Soil Test P and K	
		VL to M	H to VH
Fields with commercial fertilizer only.	15 lbs. N above recommendation	25 lbs. or 25% above P ₂ O ₅ or K ₂ O broadcast or row rec. respectively	15 lbs. or 15% above P ₂ O ₅ or K ₂ O broadcast or row rec. respectively
Fields with manure applied on a P ₂ O ₅ removal basis	80 % of manure N credit. 10 lbs. commercial N above recommendation, if commercial N applied	Manure application rates should not exceed P ₂ O ₅ removal for the rotation. 15 lbs. /ac. commercial fertilizer P ₂ O ₅ or K ₂ O can be added as necessary.	
Fields with manure applied on a N recommendation basis		Manure applications not limited based on Soil Test P or K. Fertilizer applications limited to 15 lbs. P ₂ O ₅ OR K ₂ O above recommendation.	

Consult Conservation practice Standard 590 and State Chapter 7020 rules for additional detail on when to recommend P-based rates. Commercial P₂O₅ and K₂O fertilizer deviations apply to recommendations for either individual crop years or single applications intended for 2 or more crop years.

Field specific planning procedure

1. Gather information developed from baseline nutrient management planning and implementation (e.g. soil tests, manure analyses, crop histories, and producer concerns such as impacts of manure applications on alfalfa). Develop baseline plan components not completed in the initial year of planning including N and P loss assessments.
2. Determine if manure application rates will be based on nitrogen or phosphorus. For N based manure applications, determine if additional N should be provided by commercial fertilizer rather than relying exclusively on manure.
3. Develop nutrient budgets for respective fields. These budgets consider Nitrogen provided by the preceding year's manure applications and the preceding two years' crops. Manure N crediting for the 3rd cropping season after application is encouraged on fields receiving annual manure applications
4. Develop plan in consultation with producer. Retain computations used to determine: a.) amount of manure generated, b.) nutrients available from organic sources, c.) realistic yield goals, and d.) manure and commercial fertilizer needs. Also retain soil test results and manure analyses.
5. Follow-up. Provide assistance to the producer in evaluating results of implementing the plan and in developing subsequent plans.

Field specific plan components

Consult Conservation Practice Standard 590 and the publication "Components of a Nutrient Management Plan in Minnesota" for detail. **Both are available on-line.** A sample nutrient management plan containing a template field specific annual plan can be found in the exhibits section of this handbook as exhibit MN-3 in section 600.5.

COMPREHENSIVE NUTRIENT MANAGEMENT PLANNING (CNMP)

Comprehensive nutrient management planning (CNMP) must be consistent with national and state NRCS policies and guidance as described above as well as with CNMP guidance found in the National Planning Procedures Handbook (NPPH) available on-line at: http://www.nrcs.usda.gov/programs/afo/cnmp_guide_index.html. The Minn. nutrient management web-site listed above also contains a link to the NPPH site.

CNMPs, formerly called Agricultural Waste Management Systems emphasize system planning of all manure and wastewater (e.g. milkhouse wastes) aspects of livestock operations. Those aspects include production (including feed management), collection, storage, treatment, transfer, and utilization of manure including nutrient management as described earlier. Odor management when required by law, dead animal disposition, silage leachate and safety including emergency action plans are also addressed. CNMPs combine animal feedlot or confinement area plans with nutrient or manure management (utilization) plans and as such are similar to EPA or MPCA requirements for feeding operation pollution control and manure land application.

CNMP planning procedure

Most aspects of CNMP planning are addressed in NRCS' Agricultural Waste Management Field Handbook (AWMFH) as components or planning considerations of Ag. Waste management systems. That handbook is available for viewing at local NRCS field offices or on-line at: <http://www.ftw.nrcs.usda.gov/awmfh.html>. Information in the handbook and information presented earlier on nutrient management (land application) will not be repeated here. Additional planning procedure guidance can also be found elsewhere, most notably Midwest Plan Services' Livestock and Poultry Environmental Stewardship (LPES) curriculum. That curriculum addresses most aspects of CNMPs including animal dietary strategies, emergency action plans and air quality and is available at <http://www.LPES.org/>.

CNMPs are systems. Accordingly it is critical for the producer, engineers, agronomists, soil erosion control specialists and other specialists such as animal nutritionists to work together in a coordinated manner when planning.

Part of the CNMP planning process in Minnesota includes an evaluation of all areas where livestock are housed and manure is generated, stored and/or treated. This includes stockpile areas. Potential for surface and groundwater pollution potential can be evaluated by various means but will include use of the Fleval (Feedlot evaluation) model. Potential for feedlot odor issues can be evaluated by use of the University of Minnesota's **Odor From Feedlots Setback Estimation Tool (Offset)** available at: <http://manure.coafes.umn.edu/index.html>

The evaluation of manure and waste production should include watering and feeding systems to insure that spillage and wastage is minimized. Evaluating additional elements of feed management is not required but extremely important relative to unnecessary feeding expense, loss of P to surface waters and loss of N to surface and groundwaters and air. Feed management will play an ever-increasing role in future animal feeding operation plans as P-based manure land applications and reductions in odor emissions due to nitrogen compounds are emphasized.

CNMP plan components

The NPPH web-site and Minnesota nutrient management web-sites, **both listed above**, list CNMP plan components or CNMP requirements for EQIP contracts in Minnesota respectively. The Minnesota site also contains a CNMP plan component checklist.

Formatting a CNMP can vary dependent on planners and producers. Variation normally occurs in the level of detail given to individual CNMP plan components. Currently the suggested format for Minnesota is the same as the format for a nutrient management plan. Specifically, a CNMP contains generic narratives addressing baseline plan components as well as detailed field specific nutrient management recommendations. The generic narratives differ from baseline narratives by inclusion of additional topics such as mortality disposal. Sample CNMP generic narratives are **available on-line and are also contained in the “Nutrient Management Planner for Minnesota” software**.

A sample Ag Waste Management Plan, similar to a CNMP is also found as Appendix 13c of the AWMFH. That narrative is longer than Minnesota narrative, covers most but not all the same material and provides the appropriate level of detail. The Minnesota narratives reference certain reports rather than including that information in the narrative itself and also as noted above, discuss mortality management and as requested feed management.

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